

1 **REMARKS**

2 Applicant respectfully requests reconsideration and allowance of the subject
3 application. Claims 21 and 24 are amended. No claims are added or canceled.
4 Claims 1-26 are pending in this application.

5
6 **35 U.S.C. § 102**

7 **Claims 1, 8, 9, 11, 12, 17, 19, 21 and 24**

8 Claims 1, 8, 9, 11, 12, 17, 19, 21 and 24 are rejected under 35 U.S.C.
9 §102(b) as being anticipated by U.S. Patent Number 5,781,896 issued to Dalal
10 (hereinafter "Dalal"). Applicant respectfully traverses the rejection.

11 Anticipation is a legal term of art. Applicant notes that in order to provide a
12 valid finding of anticipation, several conditions must be met: (i) the reference must
13 include every element of the claim within the four corners of the reference (see
14 MPEP §2121); (ii) the elements must be set forth as they are recited in the claim
15 (see MPEP §2131); (iii) the teachings of the reference cannot be modified (see
16 MPEP §706.02, stating that "No question of obviousness is present" in conjunction
17 with anticipation); and (iv) the reference must enable the invention as recited in the
18 claim (see MPEP §2121.01). Additionally, (v) these conditions must be
19 simultaneously satisfied.

20 The §102 rejection of claims 1, 8, 9, 11, 12, 17, 19, 21 and 24 is believed
21 to be in error. Specifically, the PTO and Federal Circuit provide that §102
22 anticipation requires that each and every element of the claimed invention be
23 disclosed in a single prior art reference. *In re Spada*, 911 F.2d 705,
24 15 USPQ2d 1655 (Fed. Cir. 1990). The corollary of this rule is that the
25 absence from a cited §102 reference of any claimed element negates the

1 anticipation. *Kloster Speedsteel AB, et al. v. Crucible, Inc., et al.*,
2 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986).

3 No §103 rejection has been lodged regarding claims 1, 8, 9, 11, 12, 17,
4 19, 21 and 24. Accordingly, if Applicant can demonstrate that Dalal does not
5 disclose any one claimed element with respect to claims 1, 8, 9, 11, 12, 17, 19,
6 21 and 24, the §102 rejections must be withdrawn, and a subsequent non-final
7 action made with a different rejection in the event that the Examiner still finds
8 any of such claims to be unallowable.

9 Applicant notes the requirements of MPEP §2131, which states that
10 "TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY
11 ELEMENT OF THE CLAIM." This MPEP section further states that "A
12 claim is anticipated only if each and every element as set forth in the claim is
13 found, either expressly or inherently described, in a single prior art reference.'
14 *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2
15 USPQ2d 1051, 1053 (Fed. Cir. 1987). 'The identical invention must be
16 shown in as complete detail as is contained in the ... claim.' *Richardson v.*
17 *Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir.
18 1989). The elements must be arranged as required by the claim, but this is not
19 an ipsissimis verbis test, i.e., identity of terminology is not required. *In re*
20 *Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)."

21 **Claim 1** recites "a method for processing a database query," comprising:
22 "partially pre-aggregating records in a database according to at least one grouping
23 column" "to provide a result that contains at least two records having like
24 grouping column values." (Emphasis added). Claim 1 also recites the step of
25

1 “aggregating records derived from the partial pre-aggregation to provide a result
2 that contains records having unique grouping column values.”

3 Partial aggregation is defined in the specification (p. 15):

4 [T]he output stream from pre-aggregation may
5 contain multiple records related to the same customer,
6 each one covering a subset of that customer’s invoices.
7 Traditional, complete aggregation always outputs a
8 single record for each customer. This is the difference
9 between *partial* pre-aggregation and pre-aggregation.

10 A partial aggregation (or partial pre-aggregation as used in the example) is
11 an incomplete aggregation, so to speak, that may be performed as a preliminary
12 step in a database query. Normally after an aggregation is completed, no two
13 records contain a grouping column value that is the same as the grouping column
14 value of another record.

15 Dalal does not disclose or anticipate a partial aggregation or pre-
16 aggregation. The operations disclosed in Dalal are merely aggregations that
17 Applicant has distinguished from the claimed pre-aggregation.

18 In a previous Office Action, the Office stated that a “multiple aggregation
19 query in Dalal is a query that utilized more than one grouping column, aggregating
20 one grouping column at a time, sequentially – this is clearly partial aggregation.”

21 **Applicant contends that this is NOT partial aggregation and that the**
22 **Office is relying on this particular view to base the rejection. Such reliance is**
23 **erroneous.**

24 Applicant points out that the process disclosed and described in Dalal is a
25 process that is well known in the art and referred to as a “group by with rollup”
operation. The “group by with rollup” operation is supported by all major
databases in the art. The “group by with rollup” operation may also be referred to
as “grouping sets” (at least in SQL).

1 Fig. 11 of Dalal is an explicit example of a “group by with rollup”
2 operation, even though not specifically referred to as such in the reference. Fig. 11
3 can be described as performing a “group by” operation on the ‘Salesperson’
4 column and, subsequently, performing a “rollup” operation on the ‘Division’
5 column. In other words, the “rollup” operation means that the Level 1 Result
6 Tables are grouped by ‘Division’. As a practical matter, the operation described
7 by Fig. 11 comprises two consecutive grouping operations.

8 Dalal does *not* disclose or anticipate only *partially* aggregating each
9 grouping column. The examples shown and described in Dalal clearly indicate
10 that a full aggregation is performed on the grouping columns because after each
11 aggregation, **each grouping column value in the grouping column that was**
12 **aggregation is unique**, i.e. no two grouping column values are alike. This
13 element is fundamental to all the claims in the Application.

14 If the example shown in Dalal were applied to claim 1, then a first partial
15 pre-aggregation on the “Salesperson” grouping column would produce a result that
16 contained non-unique grouping column values. But this is not the case in Dalal,
17 since each “Salesperson” value in Fig. 11 is unique.

18 Per claim 1, another aggregation would subsequently be performed on the
19 partial pre-aggregation result, so that each grouping column value was unique in
20 the final result. This subsequent aggregation is a complete aggregation as is
21 known in the art and described in the specification.

22 Likewise, a second partial pre-aggregation on the “Division” grouping
23 column would produce a result that contained non-unique grouping column values.
24 Again, this is not shown in Fig. 11 (or in Dalal in general) because the “Division”
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1 column of the Level 2 Result Table contains only unique values. Claim 1 requires
2 at least two equivalent values.

3 After such a partial pre-aggregation, a typical aggregation operation would
4 be performed on the partial pre-aggregation result, so that each grouping column
5 value was unique in the final result.

6 In summary, the “group by with rollup” operations (referred to in Dalal as a
7 “multiple-level aggregation”) disclosed in Dalal is not a partial aggregation. As a
8 matter of logic, the aggregations included in the multiple-level aggregation must
9 be performed sequentially. However, the described operation – whether referred
10 to as a “group by with rollup” or as a “multiple-level aggregation” – does not rise
11 to the partial pre-aggregation that is required by claim 1.

12 Accordingly, claim 1 is not anticipated by Dalal and is allowable over the
13 cited reference. The rejection, therefore, should be withdrawn.

14 **Claims 8, 9 and 11** depend from claim 1 and are allowable by virtue of that
15 dependency.

16 **Claim 12** recites a relational database system that includes, *inter alia*, a
17 record store and a query processor configured “to process a query on the record
18 store according to at least one grouping column, the query processor being
19 configured to partially pre-aggregate the record store to provide a result that
20 contains **at least two data records that have like grouping column values.**”
21 (Emphasis added).

22 As previously discussed in the response to the rejection of claim 1, a typical
23 aggregation does not result in any two records having an identical grouping
24 column value as required by claim 12. The operations referred to in Dalal are
25 sequential aggregations - one follows the other. But these sequential aggregations

1 are two independent, complete aggregations – neither of the sequential
2 aggregations is a partial aggregation.

3 Also, the previous discussion of how Dalal merely discloses a “group by
4 with rollup” operation that is well known in the art also applies to claim 12, since
5 claim 12 requires a partial pre-aggregation operation.

6 Therefore, Dalal does not disclose or anticipate a partial aggregation or
7 partial pre-aggregation. As a result, claim 12 is allowable over the cited reference
8 and the rejection thereof should be withdrawn.

9 **Claims 17 and 19** depend from claim 12 and are allowably at least by the
10 same reasoning discussed in the response to the rejection of claim 12. Therefore,
11 the rejection of claims 17 and 19 should also be withdrawn.

12 **Claim 21** recites a relational database computer program that comprises
13 “partial pre-aggregation code to partially pre-aggregate data records according to
14 at least one grouping column value to provide a partial pre-aggregation result
15 having two or more records having like grouping column values.” The relational
16 database computer program also includes “aggregation code” that aggregates the
17 result of the partial pre-aggregation.

18 Again, it is noted that – similar to claims 1 and 12 – the current amendment
19 to claim 21 substantially restores claim 21 to its original language. After further
20 review of the references, Applicant has determined that the previous amendment
21 language is unnecessary to distinguish the disclosed invention from the cited
22 references.

23 As previously discussed, Dalal merely discloses a “group by with rollup”
24 operation (i.e. a multiple level aggregation) that does not include partial
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1 aggregation. Therefore, Dalal does not disclose or anticipate a partial pre-
2 aggregation operation as required in claim 21. .

3 Accordingly, claim 21 is allowable over the cited references and the
4 rejection of claim 21 should be withdrawn.

5 **Claim 24** recites a relational database computer program comprising
6 computer-executable instructions that perform several steps. The steps include
7 “aggregating each input record in the stream” to create a record store, “joining
8 records in the record store with other data,” and aggregating the records output
9 from the join. Claim 24 also makes clear that “the records output from the join
10 include **at least two records that have an identical grouping column value.**”
11 This restriction, in essence, renders the first aggregating step a partial aggregation.

12 As previously discussed, the cited reference only describes an aggregation,
13 a multiple level aggregation, and/or a “group by with rollup” operation wherein no
14 records output from an aggregation contain an identical value in the grouping
15 column. The identical values cited in the Office Action are contained in a
16 grouping column on which the aggregation was not performed. The operations
17 disclosed in Dalal are merely typical aggregations that completely aggregate
18 records on a grouping column so that no record resulting from the aggregation
19 contains an identical value in the aggregated grouping column. This is contrary to
20 claim 24. After a first complete aggregation is performed, a second complete
21 aggregation is performed on another grouping column.

22 Claim 24 clearly recited a partial aggregation that is not disclosed in any
23 reference. As a result, claim 24 is allowable over Dalal and the rejection thereof
24 should be withdrawn.
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1 35 U.S.C. § 103(a)

2 Claims 2-5, 13-15, 20, 22, 23 and 25

3 Claims 2-5, 13-15, 20, 22, 23 and 25 stand rejected under 35 U.S.C. 103(a)
4 as being unpatentable over Dalal in view of U.S. Patent Number 6,115,705 issued
5 to Larson (hereinafter "Larson"). Applicant respectfully traverses the rejection.

6 Larson was filed on May 19, 1997 and issued on September 5, 2000. The
7 instant application was filed on June 30, 2000. As such, Larson qualifies as prior
8 art only under the timing provisions of 35 U.S.C. §102(e).

9 Larson is assigned to the Microsoft Corporation, Redmond, WA. The
10 instant application is also assigned to the Microsoft Corporation of Redmond, WA.

11 As such, Larson is not available as prior art under 35 U.S.C. 103, as is
12 discussed in more detail in MPEP §706.02(l)(1), entitled "Rejections Under 35
13 U.S.C. 102(e)/103; 35 U.S.C. 103(c)". This MPEP section cites 35 U.S.C. 103(c):

14 35 U.S.C. 103. Conditions for patentability; non-obvious
15 subject matter.

16 (c) Subject matter developed by another person, which
17 qualifies as prior art only under one or more of subsections (e), (f),
18 and (g) of section 102 of this title, shall not preclude patentability
19 under this section where the subject matter and the claimed invention
20 were, at the time the invention was made, owned by the same person
21 or subject to an obligation of assignment to the same person.

22 More specifically, this MPEP section states that "Effective November 29,
23 1999, subject matter which was prior art under former 35 U.S.C. 103 via 35 U.S.C.
24 102(e) is now disqualified as prior art against the claimed invention if that subject
25 matter and the claimed invention "were, at the time the invention was made,
owned by the same person or subject to an obligation of assignment to the same
person." This change to 35 U.S.C. 103(c) applies to all utility, design and plant
patent applications filed on or after November 29, 1999, including continuing

1 applications filed under 37 CFR 1.53(b), continued prosecution application filed
2 under 37 CFR 1.53(d), and reissues."

3 Accordingly, Larson is not available as prior art under 35 U.S.C. §103 with
4 respect to this application, and, as such, the rejection of claims 2-5, 13-15, 20 and
5 23-25 is prima facie defective. Additionally, no other grounds for rejection have
6 been lodged regarding claims 2-5, 13-15, 20 and 23-25. Accordingly, in the event
7 that the Examiner still finds such claims to be not allowable, a subsequent non-
8 Final action must be made with different grounds for rejection.

9 The preceding notwithstanding, Applicant also presents the following
10 arguments with respect to the claims rejected under § 103(a).

11 **Claims 2-5** depend from claim 1 and are allowable at least by virtue of that
12 dependency for the reasons stated in the response to the rejection of claim 1.
13 Neither reference teaches or suggests a partial aggregation or partial pre-
14 aggregation. As discussed above, this makes the claims allowable over the cited
15 references and the rejection of these claims should be withdrawn.

16 **Claims 13-15 and 20** depend from claim 12 and are allowable at least by
17 virtue of that dependency for the reasons stated in the response to the rejection of
18 claim 12. The addition of Larson does not remedy the noted deficiency previously
19 discussed because Larson does not teach or suggest partial aggregation or partial
20 pre-aggregation.

21 Accordingly, the rejection of claims 13-15 and claim 20 should be
22 withdrawn.

23 **Claims 22 and 23** depend from claim 21 and are allowable at least by
24 virtue of that dependency for the same reasons set forth in the response to the
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1 rejection of claim 21, above. Accordingly, the rejection of these claims should be
2 withdrawn.

3 **Claim 25** depends from claim 24 and is allowable at least by virtue of that
4 dependency for the same reasons set forth in the response to the rejection of claim
5 24, above. Accordingly, the rejection of claim 25 should be withdrawn.

6 Claims 6, 7, 10, 16, 18 and 26

7 **Claims 6, 7, 10, 16, 18 and 26** are rejected under 35 U.S.C. 103(a) as being
8 unpatentable over Dalal in view of Larson and further in view of U.S. Patent
9 Number 6,032,144 to Srivastava et al. (hereinafter Srivastava). Applicant
10 respectfully traverses the rejection.

11 These claims depend from claims that have been shown, above, to be
12 allowable over Dalal. The addition of Larson and/or Srivastava to the analysis
13 does not provide a reference that teaches or suggests partial aggregation or partial
14 pre-aggregation.

15 As previously discussed, Larson is not available as prior art and, therefore,
16 this rejection – to the extent that it relates to the Larson reference – is defective.

17 Srivastava describes a relational database system and a method for query
18 processing using early aggregation. A collection of equivalence rules involving a
19 multi-set version of a relational algebraic theta-semijoin operation is used to
20 generate relational algebraic expressions equivalent to a computer programming
21 language query. The expressions are used by way of example to describe a process
22 that computes cost estimates for generated expressions. Based on the computed
23 cost estimates, the least costly implementation of a complex query is determined
24 and queries are cost-based optimized.

1 But Srivastava does not resolve the deficiency present in Dalal, to-wit: there
2 is no teaching or suggestion of a partial pre-aggregation operation that is required
3 by the rejected claims as a result of their dependencies.

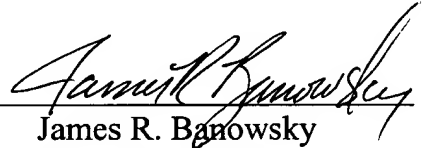
4 Accordingly, these claims are allowable over the cited references and the
5 rejection thereof should be withdrawn.

6 **Conclusion**

7 All pending claims 1-26 are in condition for allowance. Applicant
8 respectfully requests reconsideration and prompt issuance of the subject
9 application. If any issues remain that prevent issuance of this application, **the**
10 **Examiner is urged to contact the undersigned attorney before issuing a**
11 **subsequent Action.**

12
13 Respectfully Submitted,

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15 Date: 11/13/03

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